



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#21
3/11/03
7C

In re the Application of: HAYASHI, Noriya

Group Art Unit: 1712

Serial No.: 09/664,332

Examiner: Robert E. Sellers

Filed : September 18, 2000

P.T.O. Confirmation No.: 4422

For : ENERGY RAY-CURING RESIN COMPOSITION

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
Washington, D.C. 20231

Sir:

I, NORIYA HAYASHI, of c/o Nagoya Research & Development Center, MITSUBISHI HEAVY INDUSTRIES, Ltd., 1-Takamichi Iwatsuka-cho, Nakamura-ku, Nagoya-shi, Aichi-ken, Japan, declare and state ;

1. I am the inventor of the above identified application.
2. I am familiar with the Office Action dated September 3, 2002, and the prior art cited therein.
3. I and/or those under my direct supervision and control have conducted tests as follows:

Experiment data

Add d Examl 1

Maleic anhydride 0.65 mol was add d to one mol of Celoxide 2021P (alicyclic epoxy resin; 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexane-carboxylate, manufactured by Daniel Chemical Co., Ltd.) and dissolv d by

stirring to obtain a solution. - (a)

50wt% of Sun Aid SI-80L (cationic photo-thermopolymerization initiator; Formula (IV), manufactured by Sanshin Chemical Co., Ltd.) was made by using γ -butyrolactone as a solvent. - (b)

Blended with 100 parts by weight of (a) was 1.0 parts by weight of (b).

- (c)

A glass vessel (\varnothing 30 mm (inside diameter 27.5 mm) x H. 45 mm) was charged with (c) so that the liquid height becomes 40 mm. This was irradiated with UV for 3 minutes. The irradiation conditions were a UV irradiation apparatus: UVL-1500M2 (manufactured by Ushio Denki Co., Ltd.), the kind of a lamp: metal halide lamp, a lamp intensity: 120 w/cm, a lamp length: 125 mm, in the air, at room temperature, under atmospheric pressure and an irradiation distance: 15 cm.

The sample described above was completely cured in several minutes while chain curing.

Added Example 2

The same test as in Added Example 1 was carried out, except that Sun Aid SI-60 (cationic photo-thermopolymerization initiator; Formula (IV), manufactured by Sanshin Chemical Co., Ltd.) was blended in place of Sun Aid SI-80L.

The sample described above was completely cured in several minutes while chain curing.

Added Example 3

Prepared was a mixture of CYRACURE UVI-6974 (cationic photo-thermopolymerization initiator (sulfonium salt), manufactured by Union Carbide Co.) and (b) in the Added Example 1 with a ratio of 8:2. - (d)

The same test as in Added Example 1 was carried out, except that (d) was blended in place of (b).

Add d Comparative Example 1

The same test as in Add d Example 1 was carried out, except that DAICAT 11 (aryl base sulfonium salt type/solvent = 1/1, manufactured by Danicel Chemical Co., Ltd.) was blended in place of (b).

The sample described above was cured only 2 mm from the surface thereof, and the remainder was still liquid.

Added Comparative Example 2

The same test as in Added Example 1 was carried out, except that CYRACURE UVI-6974 (cationic photo-thermopolymerization initiator (sulfonium salt), manufactured by Union Carbide Co.) was blended in place of (b).

The sample described above was cured 18 mm from the surface thereof, but the remainder was still liquid.

The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and believed are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed this 28 day of February, 2003

NORIYA HAYASHI

NORIYA HAYASHI